



## CASE STUDY

# THE SANDS POINT CENTER

## Mitigating Risk in Long-Term Care Workflow Automation Through Operational Transformation

Today, the most successful health information technology (HIT) models follow a specific sequence of stages to create a longitudinal health record that begins with workflow automation. The \$13.5 million Quality of Care Demonstration Project is an effort to study HIT effectiveness in the long-term care setting. This case study chronicles the results achieved at Sands Point Center for Health and Rehabilitation, one of the Demonstration Project participants, after implementing the SigmaCare® mobile electronic medical records (EMR) system.

Through SigmaCare's proprietary approach to "operational transformation," the Sands Point Center successfully mitigated many of the risks typically linked to HIT adoption. The vendor's comprehensive approach to system implementation—backed by hands-on training, on-the-job support and 24/7/365 support—resulted in high adoption rates. As a result of improved documentation and efficiency gains, the facility realized a 450% return on investment, driven by an annual revenue increase of \$870,525 and annual

operational cost savings of \$298,344. Increased revenue of \$3.9 million over the duration of the five-year contract also increased the facility's valuation by more than \$10.8 million. In addition, the Sands Point Center improved quality of care by taking more proactive measures and integrating real-time data into core management and clinical decision-making processes.

Operations at the Sands Point Center were fundamentally transformed through the implementation of the enterprise-wide mobile EMR. The shift in the facility's culture and workflow was made possible through optimum user adoption of the point-of-care technology as signified by marked improvements in clinical and financial outcomes. With sustained workflow automation and electronic connectivity with vendors, providers and Regional Health Information Organizations (RHIOs), longitudinal health records begin to emerge. Armed with these records, consumers become more engaged in their healthcare resulting in enhanced disease management and improved standards of care.

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### BACKGROUND

Health information technology (HIT) was introduced some 20 years ago with the hope of improving quality of care and reducing costs. Because of the complex nature of the healthcare industry, HIT business models have targeted various points in the healthcare continuum—from the bedside to quality management and cost containment—with varying levels of success.

The adoption of electronic medical records (EMRs) and computerized physician order entry (CPOE) is the first step in moving an organization toward the goals of enhanced quality of care and financial savings. However, automating workflow is a considerable obstacle to overcome. Healthcare organizations are often reluctant to make the financial investment in HIT, and leadership is uncertain of how moving from paper to electronic documentation might impact operations, regulatory surveys and reimbursement.

Until workflow automation is adopted at the point of care, a healthcare organization cannot advance through the HIT continuum toward connectivity to other healthcare providers, interaction with consumers, reliable quality measurements and relevant quality improvement processes, improved disease management programs, and optimum health and wellness initiatives.

Long-term care facilities are especially reluctant to adopt HIT and automated workflow. Only 1% of skilled nursing facilities in the country now use a full EMR system. Most of the reluctance is related to financial constraints and the associated risks of a failed implementation.

The \$13.5 million Quality of Care Demonstration Project, funded by a grant from the State of New York, shows how long-term care can begin the transformation with seed money for HIT adoption. In the Demonstration Project, 20 skilled nursing facilities were selected to participate, making the program one of the first large-scale deployments of HIT in nursing homes. The project was administered by a three-member Quality of Care Oversight Committee (QCOC), comprised of representatives from the 1199SEIU United Healthcare Workers East, employers contributing to the Greater New York funds, and the long-term care industry's arbitrator. After a rigorous request for proposal (RFP) process, the QCOC chose SigmaCare® as the mobile EMR system for the project.

One of the facilities participating in the Demonstration Project, the Sands Point Center for Health and Rehabilitation, is a 180-bed nursing home located in Port Washington, New York. The facility offers short-term rehabilitation, long-term care, IV therapy, pulmonary therapy, and wound-care services.

Through an academic study by Cornell University, the Commonwealth Fund and the Wharton School of the University of Pennsylvania, the goal of the Demonstration Project is to examine how technology impacts three key areas in long-term care:

- Clinical outcomes and quality of care
- Workforce retention and recruitment
- Financial and business operations

Funding for technology removed one obstacle—cost—in moving these facilities toward HIT. The Sands Point Center decided to participate in the Demonstration Project because the grant paid for the first 17 months of the EMR system, which mediated a significant barrier to adoption.

Another challenge involved perceived risks associated with automated workflow in the long-term care environment. This obstacle was mitigated and ultimately overcome through the SigmaCare® proprietary “operational transformation” process.

This case study demonstrates how operational transformation prepares a long-term care facility, such as Sands Point, for optimal end-user adoption of HIT and empowers direct-care workers and managers to use real-time data to make informed decisions. Automated workflow, combined with data-driven decisions made across the enterprise, results in improved delivery of care and efficiencies. The return on the investment in HIT comes from a combination of continued cost savings and increased revenue. Less paperwork and greater workflow efficiencies decrease operational costs. Informed decision-making from real-time clinical alerts and reminders improves quality of care for residents, and accurate medical record documentation—especially from certified nursing assistants and rehabilitation therapists—increases revenue.

Once the workflow has been automated and the facility connects electronically with vendors, providers and Regional Health Information Organizations (RHIOs), a true longitudinal health record emerges. With access to protected health records, residents and families become more empowered in the care-planning process. Once consumers are fully engaged in their healthcare, new initiatives in disease management and improved standards of care emerge—all made possible through sustained automation of the clinical workflow.

# PROBLEM

Currently, most of the focus in the HIT continuum has been on portals and clearinghouses. Healthcare organizations traditionally target connectivity with payors and third-party partners via portals for administrative functions, such as eligibility and benefit administration, prior authorization, and management of referrals and claims. In addition, government initiatives have focused on developing organizations such as RHIOs and Health Information Exchanges (HIE), which act as clearinghouses and shared repositories for clinical data across regional healthcare organizations.

However, as illustrated in the chart below, to achieve improved quality of care and cost savings, the HIT continuum requires longitudinal health records built on a foundation of facility-wide workflow automation. Without this cornerstone, connectivity and interoperability with critical external partners exclude reliable and measurable data related to key

indicators of quality of care. Successful implementation of workflow automation can create a true longitudinal health record in which stakeholders share data and collaborate on the resident's behalf. Only then can the HIT continuum move to the important stages of consumer connectivity and successful quality-management programs that will improve health and decrease medical costs (*see Figure 1*).

However, the foundational stage in the HIT continuum—workflow automation—has historically been avoided because of cost, effort and the risk associated with failure.

Moving a facility's culture from paper dependency to automated efficiency requires a seismic shift in organizational processes. In the long-term care setting, the potential effects of automated workflow on regulatory surveys, employee satisfaction and business operations are all top-of-mind concerns.

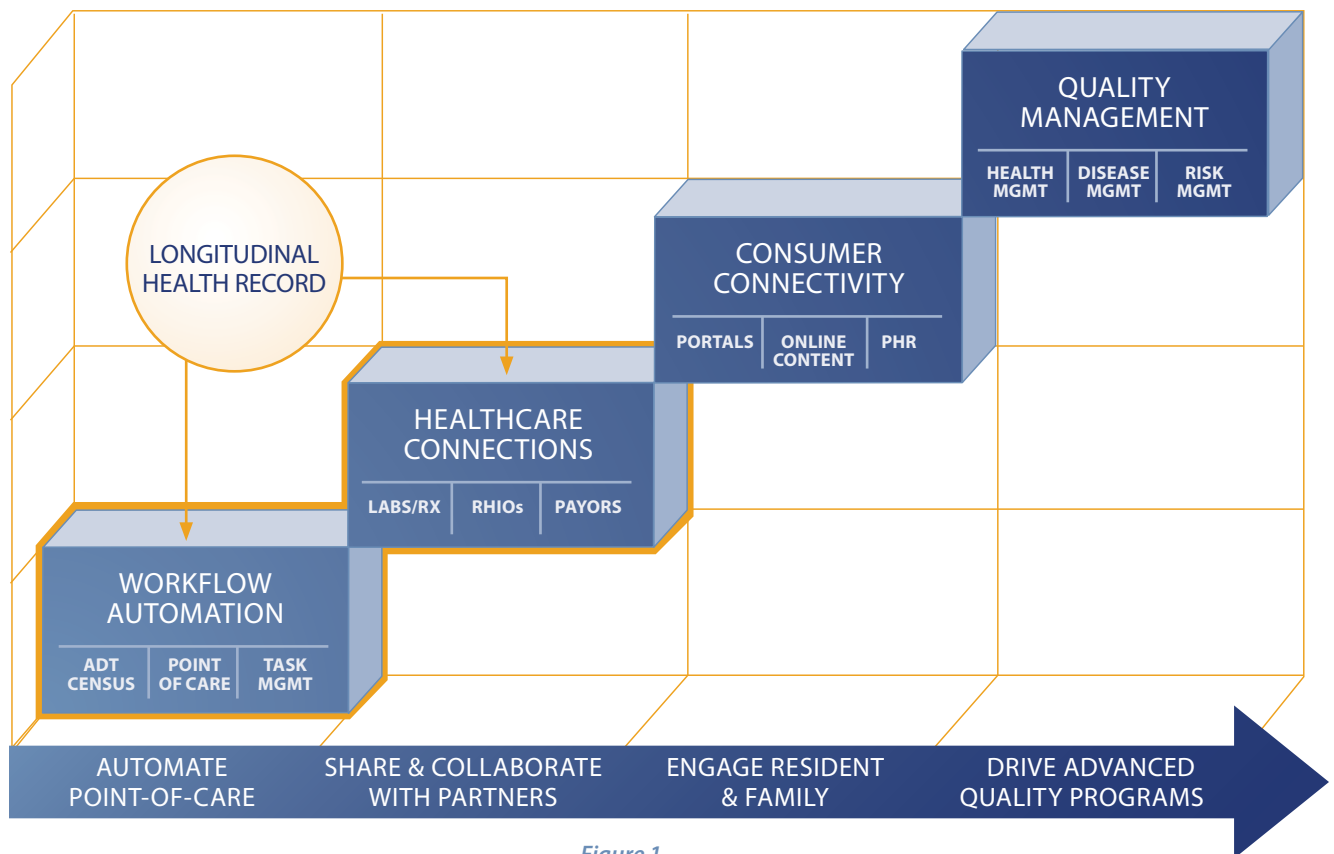


Figure 1

# CASE STUDY: THE SANDS POINT CENTER

## Mitigating Risk in Long-Term Care Workflow Automation Through Operational Transformation

### PROBLEM

**REGULATORY SURVEYS** The long-term care industry is the most heavily regulated healthcare setting in the nation. Since Medicare and Medicaid reimburse most costs, government regulation plays a substantial role in overseeing quality of care. Key health indicators—such as the prevalence of urinary tract infections, resident falls and medication use—are continually measured by regulatory agencies through surveys of medical records and on-site visits to determine compliance with state and federal regulations.

**COMPETING FACTORS** Within the industry and the individual facilities, many competing factors complicate HIT implementation. In the long-term care environment, staff, policies, financial concerns, clinical processes and resident preferences sometimes compete not only with each other, but also with external factors. Outside of the facility, regulatory requirements, family concerns, employee and resident advocacy groups, and relationships with radiology, lab and pharmacy vendors all impact day-to-day operations.

**EMPLOYEE ADOPTION** Documentation of custodial, medical and therapeutic care is performed by a variety of staff in the long-term care environment. Paraprofessionals in these facilities—certified nursing assistants (CNAs)—represent the largest contingent of the long-term care staff. The next largest group of employees who are responsible for documentation is made up of licensed nurses such as registered nurses (RNs) and licensed practical nurses (LPNs).

Beyond nursing, the facility employs or contracts licensed clinicians from a variety of disciplines, such as dietary services, social services, hospice, recreational therapy, physical therapy, occupational therapy, speech therapy, respiratory therapy and pharmacy, along with medical services, including physicians and nurse practitioners.

Management is performed on a departmental level—and on every shift. Senior management typically consists of the owner or CEO, administrator, director of finance or CFO, director of nursing, director of admissions, pharmacy director, and the medical director.

Throughout the industry, long-term care facilities experience significant staff turnover, which not only compromises resident care, but is also very costly. High staff turnover often complicates implementation of workflow automation because of the difficulty in training and the time needed for staff to gain a comfort level with moving from paper documentation to electronic medical records.

**SANDS POINT CENTER** In the spring of 2006, the Sands Point Center began participating in the Staff Time and Resource Intensity Verification (STRIVE) project initiated by the Centers for Medicare & Medicaid Services (CMS.) The STRIVE project was the first nationwide staff-time measurement study for nursing homes in the United States since 1997. The purpose of this study was to determine the amount of time that nursing home staff members spend caring for residents, as well as to obtain other resident-level clinical data, such as health status, medical conditions, services received, and facility resources used to provide care. CMS will use the current STRIVE time study to update the earlier studies and to recalibrate the Resource Utilization Groups, version 3 (RUG-III), case mix weights to reflect current care protocols and resource needs.

During the six-day STRIVE project, the CNAs on the sub-acute unit at Sands Point were assigned personal digital assistants (PDAs) to document time spent on daily activities related to resident care. The management team at the facility presumed that the CNAs would not adopt the handheld technology. However, after only two days of training, the CNAs went live with the system. By the end of the third day, the CNAs were competing with each other on the use of the technology.

Because of their experience with STRIVE, the management team at Sands Point realized that their CNAs would not only be able to handle handheld technology, but would also take pride in its use. Armed with this knowledge, the management team wanted to investigate technology initiatives that would allow CNAs to spend more time with residents and less time on paperwork.

The Sands Point Center wanted to make care more resident-centered by eliminating paper, which, in turn, would help increase the level of personal interaction between staff and residents. Like most nursing homes operating in a paper environment, one of the only levers that Sands Point Center could use to improve resident satisfaction was to focus on tasks associated with resident care and implement as many processes as possible to manage and streamline execution of those tasks.

However, improvements in staff efficiency do not necessarily lead to a home-like, resident-centered environment. At day's end, the task-oriented, paper-burdened culture in nursing homes becomes consumed with managing its own complicated processes. As a result, facility staff often do not have enough time to engage in frequent, personal interactions with residents, and the calls for improved quality of life for residents remain unanswered.

As the technology partner in the Demonstration Project, SigmaCare® strives to educate long-term care stakeholders on the benefits of workflow automation at the point of care and to debunk the common myths that surround EMRs. These stakeholders include owners and operators, labor unions, consumer advocates, long-term care associations, state departments of health, state attorney general offices, and the Centers for Medicare and Medicaid Services.

SigmaCare® with its mobile Application Service Provider (ASP) technology and comprehensive approach to user adoption seeks to achieve the following objectives in the long-term care market:

- Determine the return on investment (ROI) of HIT implementation in the long-term care setting;
- Improve financial results for long-term care facilities through increased reimbursement, cost savings and operational efficiencies;
- Improve staff satisfaction, recruitment and retention as a result of HIT implementation;
- Encourage widespread adoption by direct-care workers of PDAs and other point-of-care technology for documentation;
- Streamline operations by giving administrators and managers access to real-time data via a central dashboard;
- Show that technology—paired with the right implementation process—transforms the facility's operations and mitigates the risk introduced by workflow automation;
- Demonstrate improved survey outcomes in facilities using point-of-care HIT; and
- Encourage widespread development of longitudinal health records through automated workflow and connectivity with healthcare providers, vendors and information exchanges.

Similarly, the QCOC is evaluating the Demonstration Project results to determine the project's success in achieving the following objectives:

- Encourage widespread competency and adoption of new technology by staff
- Improve communication between supervisors, co-workers and residents
- Improve staff recruitment, retention and job satisfaction
- Create a business case for HIT adoption in the long-term care setting

After their experience with the STRIVE project, the management team at the Sands Point Center wanted to move away from the paper-based, task-oriented culture. The Center wanted the SigmaCare® handheld technology to free CNAs to spend more time engaging residents on an interpersonal level. The hope was that frequent and consistent quality time with residents would create a more home-like environment and thus enhance residents' quality of life.

The Sands Point Center also wanted to provide direct-care workers with new computer skills to improve staff satisfaction, recruitment and retention. Parenthetically, this goal also coincides with the mission of the Quality of Care Demonstration Project. Dealing with a large immigrant base and older population of nurses with minimal computer skills, the Center believed that providing new technology skills to direct-care workers would help improve staff satisfaction and drive continued commitment to the facility.

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## Mitigating Risk in Long-Term Care Workflow Automation Through Operational Transformation

### METHOD/SOLUTION

SigmaCare® used a proprietary approach to operational transformation supported by its Application Service Provider (ASP) technology that facilitated daily monitoring of EMR adoption statistics. The technology provided interoperability with internal systems and outside vendors, such as pharmacies, using web-based architecture for remote access and handheld mobility for point-of-care charting.

Operational transformation begins by assessing the facility's needs, goals and expectations—as well as perceived fears of EMRs—to develop a shared vision and facility-specific plan for implementation. A keen understanding of the facility's business environment, in addition to building relationships with stakeholders, is critical during this first step to achieve optimum adoption throughout the facility.

Adoption of workflow automation by every employee requires top-level management support, encouragement and acceptance in embracing new and better ways of working efficiently. By giving staff and leadership the appropriate tools, backed by comprehensive training and ongoing support, the risks of automating clinical workflow diminish substantially.

Throughout the implementation process, participation occurs across the entire enterprise, inspiring staff and leadership to integrate the use of real-time data and analytics into core facility-management processes to make informed decisions. From pre-implementation through post-go-live, the role of SigmaCare® shifts from tactical to operational, finally becoming strategic. Only through adoption and proficiency of the system can the facility achieve an optimal ROI and improved outcomes *(see Figure 2)*.

In short, operational transformation is a qualitative change in a facility's culture and workflow signified by marked improvements in clinical and financial outcomes. A comprehensive approach to implementing electronic medical records (EMR) makes these improvements possible by securing participation across the entire enterprise, inspiring staff and leadership to integrate real-time data into core management and clinical decision-making processes.

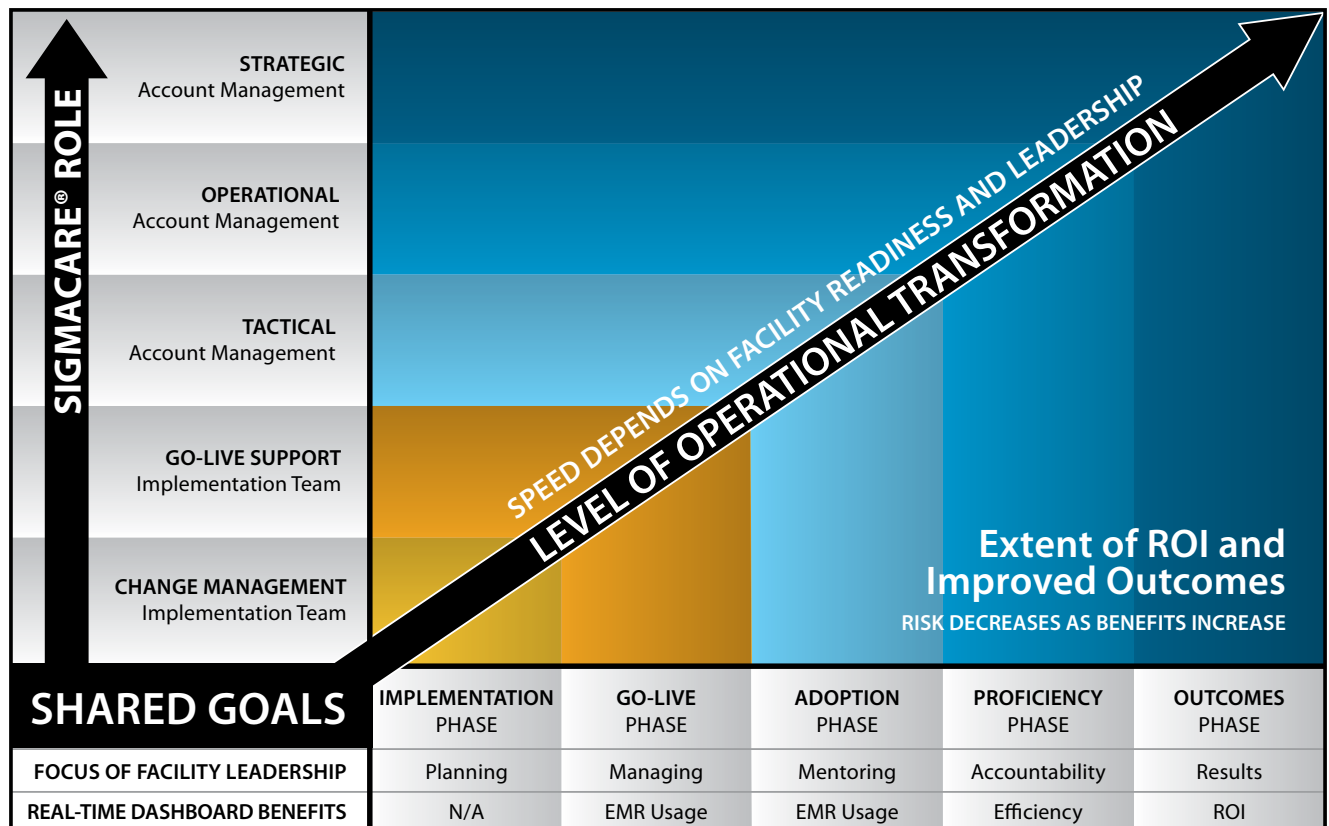


Figure 2



To achieve operational transformation and widespread user adoption, SigmaCare® provides a professional services team that includes:

**PROJECT MANAGER** Leads in project planning and coordination, monitors effectiveness of implementation, and directs hardware and networking vendors during planning and installation.

**IMPLEMENTATION ANALYST** Documents and analyzes workflow and assists with system configuration, based on facility needs.

**INFRASTRUCTURE MANAGER** Certifies the hardware and networking equipment components and installation of the technology infrastructure for use with the EMR system.

**SOFTWARE TRAINER** Develops customized educational materials, captures best practices and conducts ongoing webinar training for customers and regulatory agencies.

**GO-LIVE TECHNICIAN** Configures the system based on facility preferences and workflow analysis, provides onsite support during go-live and delivers supplemental training to end users.

**ACCOUNT MANAGER** Monitors customer satisfaction, ensures rapid response by the customer service department, and monitors clinical and financial outcomes, including enhanced reimbursement, cost savings and workflow efficiencies.

The SigmaCare® professional services team works closely with all staff at the facility throughout the following seven phases of implementation and after go-live to ensure continued success (*see Figure 3*):

**PRE-IMPLEMENTATION AND PROJECT PLANNING:**

After gaining a documented understanding of facility workflow, staffing needs, user information, physician-order and care-plan libraries, the team develops a customized plan for optimized implementation.

**READINESS PROGRAM AND CHANGE MANAGEMENT:**

At its core, the SigmaCare® Readiness Program uses a change management methodology that minimizes negative perception, while taking advantage of the positive benefits of change. The Readiness Program uses comprehensive, timely communications to build enthusiasm and cultivate an understanding of the EMR system. Extensive training, communication to specific user groups and observation of daily activities allow for a complete picture of the facility's day-to-day activities. The Readiness Program minimizes resistance, enhances excitement and encourages cooperation among all parties involved.

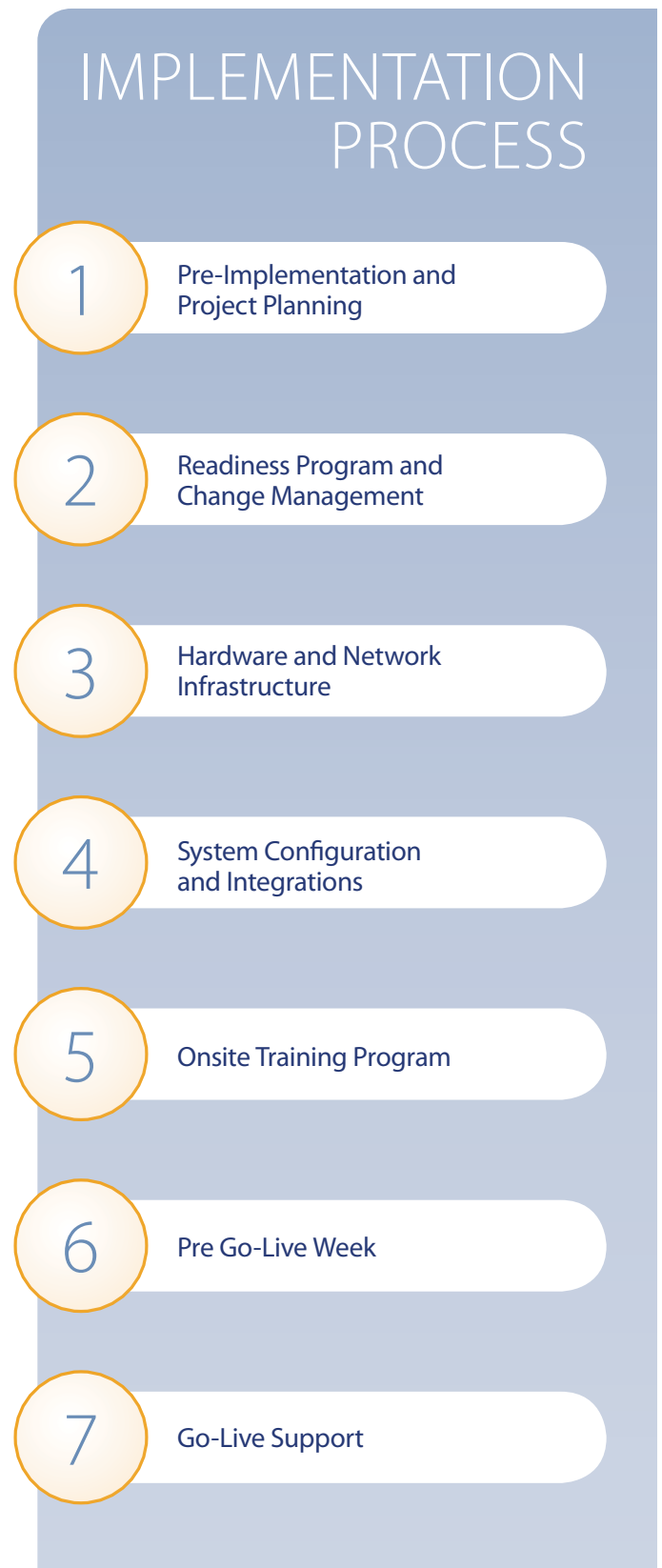


Figure 3

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### HARDWARE AND NETWORK INFRASTRUCTURE:

Following a comprehensive technical and wireless network assessment, SigmaCare® manages the installation of a fully configurable, enterprise-grade, secure 802.11x wireless infrastructure, including redundant high-speed Internet access. End users are offered hardware options based on facility needs and clinician mobility.

### SYSTEM CONFIGURATION AND INTEGRATION:

SigmaCare® works with all applicable partners and vendors of the facility to achieve the highest level of system interoperability. SigmaCare® manages the development, quality assurance and implementation of the data conversions and data exchanges with third-party systems using HIPAA-compliant industry standards such as HL7, NCPDP SCRIPT, ASC X.12, CCR, DICOM and ASTM.

### ON-SITE TRAINING PROGRAM:

The professional training team designs and implements a customized program for each nursing facility to ensure every user understands how to use the system and is eager to adopt workflow automation. Since the same training approach does not work for everyone, sessions are tailored to the audience. Training is held throughout all shifts in designated areas in the facility and through rolling classrooms. Key facility staff members (known as "peer mentors") from each nursing unit and department are assigned to the initial training sessions and become experts to act as an immediate resource to staff on that unit or department.

### PRE-GO-LIVE WEEK:

Go-live is only activated after completion of installation, integration with third-party systems, and end-user training. The week before go-live, the project manager oversees data entry for inputting information from the paper medical records into the EMR system for the residents on the unit. Back entry usually includes such medical data as physician orders, MDS assessments and care plans.

### GO-LIVE SUPPORT:

Once the EMR system is live on a nursing unit, the training team provides on-the-job support and technical assistance to clinicians and paraprofessionals across all three shifts to help reduce anxiety and solidify the knowledge gained during training. Trainers and technicians work closely with peer mentors to shadow CNAs when they first use the PDA on the unit. Licensed practical nurses (LPNs) are shadowed on their first med pass, and physicians are supported the first time they enter orders or perform renewals.

### ONGOING SUPPORT AND MONITORING:

To ensure ongoing customer satisfaction, SigmaCare® maintains a close partnership with the long-term care facility. After the project team leaves the facility, the customer support team is available 24/7/365 to provide rapid response service via phone and email. Customer service also uses remote assistance software to quickly diagnose and resolve problems.

A dedicated Account Manager is assigned to each facility, making frequent on-site visits and communicating regularly to maintain a high level of customer satisfaction. SigmaCare® continually measures performance, satisfaction and financial metrics for each facility to make certain that the system is being used to its fullest potential and to track ROI.

The EMR project at the Sands Point Center was implemented in two phases over a two-month time period starting on August 20, 2007 and ending on October 13, 2007:

### EMR IMPLEMENTATION – PHASE 1

EMR Modules	CPOE, eMAR/eTAR, MDS, Progress Notes, Care Planning
On-Site Training	8/20/07–9/9/07
Go-Live Activities	9/10/07–9/28/07
Live All Units	9/29/2007

### EMR IMPLEMENTATION – PHASE 2

EMR Modules	CNA Assignments
On-Site Training	10/1/07–10/7/07
Go-Live Activities	10/8/07–10/12/07
Live All Units	10/13/2007

The total cost of the EMR technology for the Sands Point Center over the 60-month contract was \$955,935, or \$191,187 per year:

### EMR INVESTMENT COMPONENTS

- A. Software Licensing
- B. Hardware & Networking
- C. System Interfaces
- D. Professional Services
- E. Ongoing Maintenance
- F. Leasing Finance Charge



As a facility participating in the Demonstration Project, the Sands Point Center receives a monthly subsidy of \$15,932 for 17 months totaling \$270,848. The total five-year investment in EMR technology for the Sands Point Center is actually \$685,087. However, for the purposes of this case study, the total EMR investment without the subsidy is used in ROI calculations.

The five-year EMR contract totaling \$955,935 includes the following software licensing fees and maintenance, hardware and networking, system interfaces, and implementation professional services:

#### A. SOFTWARE LICENSING FEES

Electronic Medical Records (EMR) Base System Includes  
 Census/ADT, Dashboard, Reports, and SigmaSafe®  
 CPOE and Electronic Prescribing  
 Electronic Medication/Treatment Administration Records  
 Minimum Data Set (MDS) Management  
 Care Planning and Care-Plan Meeting Tracking  
 Progress Notes by Discipline  
 User-Defined Clinical Assessments  
 Rehabilitation Charting & Charge Capture  
 CNA Assignments & Nursing Instructions

#### B. HARDWARE & NETWORKING

Networking Equipment (Firewalls, Routers, Switches, Hubs)  
 Wireless Networking Components  
 Mobile End-User Devices (Tablets and PDA's)  
 Desktop Workstations, Printers and Misc. Items  
 Installation of Networking & Hardware Equipment  
 Cabling of Network Based on Number of Drops

#### C. THIRD-PARTY SYSTEM INTERFACES

Billing/Financial System  
 Pharmacy System  
 Laboratory System  
 Radiology System  
 Hospital Clearinghouse

#### D. PROFESSIONAL SERVICES BY IMPLEMENTATION PHASE

1. Pre-Implementation & Project Planning – Workflow Analysis, Labor-Management Committees, IT Assessment
2. Readiness Program - Change Management Program by Department, Peer Mentor Program
3. Hardware & Network Infrastructure - Hardware and Wireless Network Analysis and Implementation
4. System Configuration - System Setup, Permissions, Integration Testing, Library Setup
- 5a. On-Site SigmaCare® Training - Classroom On-Site, Hands-On Training Across All Shifts
- 5b. On-Site Computer Basics Training - How to Use Desktops, Laptops, PDAs and Windows
6. Pre Go-Live Week - System Configuration, Back Order Entry Management
7. Go-Live Support - Rollout Phased by Unit, On-the-Job Support Across Each Shift

#### E. ONGOING MAINTENANCE & SERVICE

##### Software Maintenance & Customer Support Included in Software Licensing Fee

Software Maintenance Updates & New Feature Set Upgrades  
 Customer Support Available 24/7 and 365 Days a Year  
 Dedicated Account Manager Monitors Metrics and Adoption

##### Hardware & Networking Maintenance

Ongoing Hardware Maintenance  
 Ongoing Network Monitoring  
 Ongoing Primary T1 Line  
 Ongoing Backup DSL Line

##### System Interface Maintenance (20% Annually x 5 Years)

Billing/Financial System  
 Pharmacy System  
 Laboratory System  
 Radiology System  
 Hospital Clearinghouse

#### F. LEASING FINANCE CHARGE

8% of Total Contract Including Software, System Interfaces, Hardware and Networking, Professional Services, and Ongoing Interface & Hardware Maintenance.

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### RESULTS ACHIEVED

As of April 2008, 17 of the 20 long-term facilities in New York State participating in the Quality of Care Demonstration Project have gone live with the EMR technology. With more than 5,000 direct-care workers trained on the EMR system, 69,000 medication administration record (MAR) events were taking place each day, with on-time documentation rates averaging 98.8% across all facilities using the system. In these same facilities, CNA assignments numbered more than 125,000 each day, with on-time documentation rates averaging 98.5%.

The long-term care facilities participating in the Demonstration Project are being examined and compared to a control group to determine how implementation of the EMR system is impacting clinical outcomes and quality of care, workforce retention and recruitment, and financial and business operations. Although

the results of the Demonstration Project's academic studies will not be released until 2009, facilities using the EMR system, including Demonstration Product participants such as Sands Point, are reporting significant clinical, financial and operational outcomes.

### SANDS POINT CENTER

The Sands Point Center for Health and Rehabilitation has realized a significant return on investment and improvement in quality of care after implementation of the EMR technology. The five-unit, 180-bed facility has a payor mix of 55% Medicaid and 25% Medicare Part A. Immediately after Sands Point went live with the Quality of Care Demonstration Project's EMR system in October 2007, the Center achieved high user adoption and on-time documentation rates (*see Figure 4*).

## USER ADOPTION STATISTICS

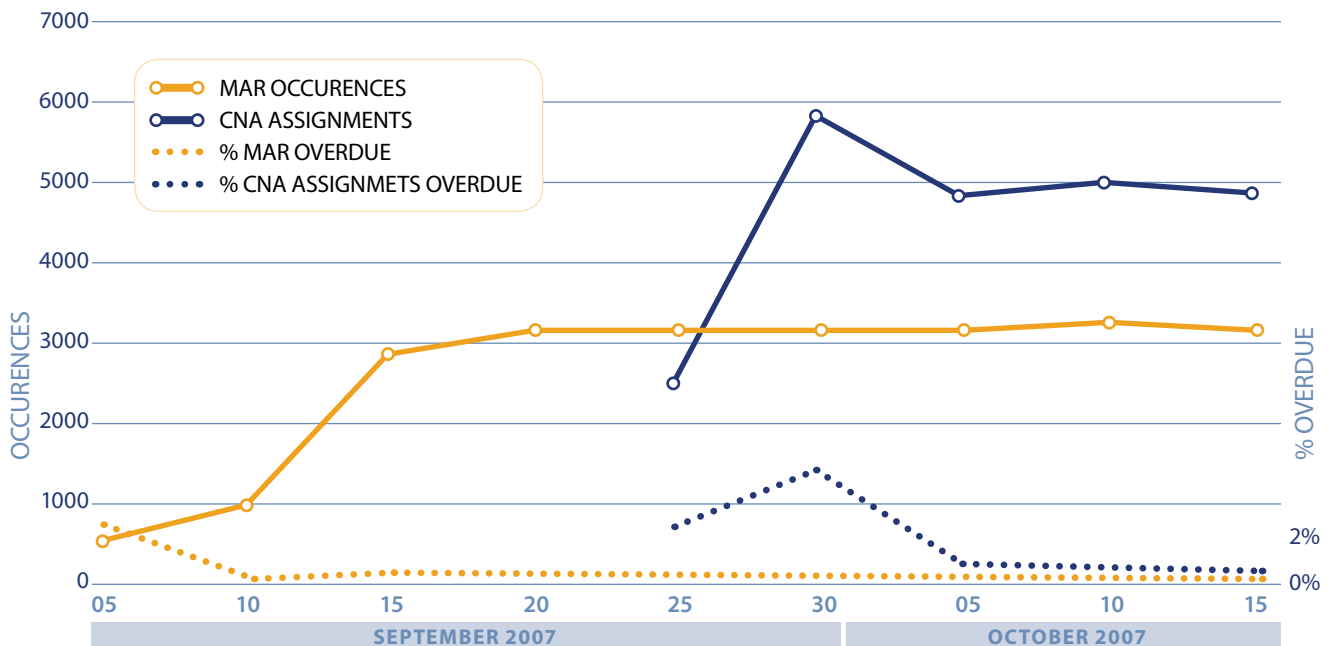


Figure 4

## QUALITY MEASURE

	BASELINE 11/06–4/07	POST EMR 11/07–4/08	PERCENT DECREASE
1.2 Prevalence of new falls	8.6%	5.9%	-32%
2.1 Residents who have become more depressed or anxious	13.4%	3.9%	-71%
3.1 Use of 9 or more medications	64.2%	50.5%	-21%
4.1 Incidence of cognitive impairment	13.3%	2.1%	-84%
5.2 Had catheter inserted and left in bladder	10.6%	4.8%	-55%
7.1 Residents who lose too much weight	12.1%	6.3%	-48%
7.2 Prevalence of tube feeding	11.3%	9.2%	-18%
8.1 Residents who have moderate to severe pain	5.3%	0.6%	-88%
9.2 Residents who spend most of their time in a bed or in a chair	2.7%	1.2%	-55%
10.1L Prevalence of antipsychotic use in the absence of psychotic or related conditions - Low Risk	10.2%	0.0%	-100%
10.3 Prevalence of hypnotic use more than two times in last week	6%	0.0%	-100%
11.1 Residents who were physically restrained	1.3%	0.3%	-75%
12.1 High-risk residents with pressure ulcers	15.5%	15.3%	-1%
12.2 Low risk residents with pressure ulcers	4.5%	0.0%	-100%
13.3 Short-stay residents with pressure ulcers	37.3%	26.8%	-28%

Figure 5

### QUALITY CARE IMPROVEMENTS

Overall Quality Indicators and Quality Measures (QI/QM) have improved at Sands Point since implementation of the EMR system (see Figure 5). The facility cites improved tracking of QI/QMs from the dashboard—along with real-time clinical alerts and reminders, such as follow-up pain assessments during med pass—as the primary drivers of improved quality of care.

The QI/QM baseline data before implementation of the EMR system, from November 2006 through April 2007, was compared with the post-EMR data, from November 2007 through April 2008. Many quality indicators and quality measures improved 50% or more at the facility, including:

- 55%** decrease in number of residents spending most of their time in a bed or chair
- 71%** decrease in number of residents who were more depressed or anxious
- 75%** decrease in number of residents physically restrained
- 84%** decrease in incidence of cognitive impairment
- 88%** decrease in incidence of residents with moderate to severe pain
- 100%** decrease in number of low-risk residents with pressure ulcers
- 100%** decrease in prevalence of hypnotic use more than twice in one week

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### RESULTS ACHIEVED

#### COST SAVINGS

In addition to quality-care improvements, savings in operational costs are improving the bottom line and contributing to the facility's overall return on investment. Operational transformation and automated workflow have reduced use of agency nurses and overtime. The staff's eagerness to embrace new processes has also improved survey compliance.

Sands Point eliminated the use of agency nurses in November 2007, just one month after going live with the EMR system. Elimination of agency nurses translated into a weekly cost savings of \$1,750 on average per week (ranging from \$1,500 to \$2,000 per week), or \$91,000 annually. Sands Point also reduced nursing overtime by 22 hours per week, on average, starting in November 2007, which translated into average cost savings of \$875 per week (ranging from \$750 to \$1000 per week), or \$45,500 annually.

The electronic medical records system also significantly reduced the cost of paper forms used at Sands Point. The total monthly cost savings of \$1,500, or \$18,000 annually, are represented by the following paper forms:

PAPER FORMS	AMOUNT
Accountability Forms	\$167
Care Plans	\$600
Dietary Assessment Forms	\$183
MDS Booklets	\$300
Nursing Progress Notes	\$50
Physician Order Forms	\$200
<b>Monthly Savings</b>	<b>\$1,500</b>

Improved formulary compliance was achieved by using the Computerized Physician Order Entry system integrated with the EMR. Formulary compliance yielded an ongoing decrease in monthly medication costs as billed by the pharmacy vendor, starting in November 2007. Pharmacy costs decreased 13%, or \$6,867 on average per month (ranging from \$4,000 to \$8,600 per month), or \$82,404 annually. However, when the typical 10% increase in 2007 medication costs is considered for inflation, the total costs decreased 21%, an average of \$11,987 per month, or \$143,844 annually.

#### PHARMACY COST SAVINGS

The following table compares the pharmacy savings at Sands Point in the first quarter of 2008 with the first quarter of 2007 with and without the 10% inflationary increase:

Q1	2008	NO INFLATION			10% INFLATION		
		2007	SAVINGS	DECREASE	2007	SAVINGS	DECREASE
Jan	\$46,000	\$50,000	\$4,000	8%	\$55,000	\$9,000	16%
Feb	\$39,000	\$47,000	\$8,000	17%	\$51,700	\$12,700	25%
Mar	\$48,000	\$56,600	\$8,600	15%	\$62,260	\$14,260	23%
<b>Avg.</b>	<b>\$44,333</b>	<b>\$51,200</b>	<b>\$6,867</b>	<b>13%</b>	<b>\$56,320</b>	<b>\$11,987</b>	<b>21%</b>

The annual savings of \$298,344 is based on a significant decrease in the following operational costs:

OPERATIONAL COST SAVINGS		AMOUNT
Agency Nurses Eliminated	\$1,750 on average/week	\$91,000
Staff Overtime Reduced	\$875 on average/week	\$45,500
Paper Forms Reduced	\$1,500 on average/month	\$18,000
Pharmacy Costs Reduced	\$11,987 on average/month	\$143,844
<b>Total Operational Cost Savings per Year</b>		<b>\$298,344</b>

#### INCREASED REVENUE

Continued improvements in Medicare Part A reimbursement rates—which on average increased 12% or \$53 per day, from \$457 to \$510—contributed to a total revenue increase of \$870,525, based on the 25% Medicare Part A census of 45 beds:

REVENUE DRIVERS	AMOUNT
RUG Daily Rate Increase for Medicare	\$53
Medicare Part A Beds (25% of Census)	45
<b>Increase in Part A Revenue Per Year</b>	<b>\$870,525</b>

The reimbursement increase was made possible by continued improvements in RUG scores as a result of two primary revenue drivers: ADL scores and rehabilitation minutes. More accurate documentation by direct-care workers using the point-of-care EMR technology resulted in more documented rehabilitation minutes and consistently higher ADL scores (see Figure 6).

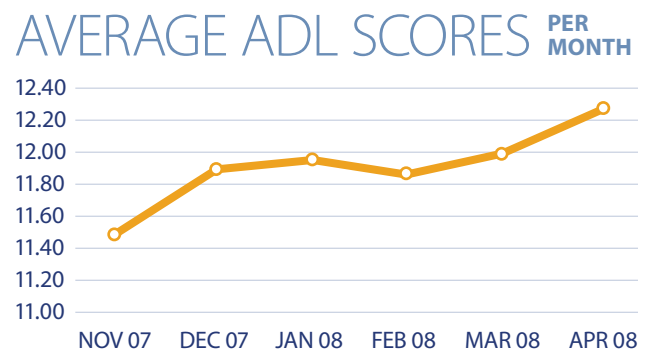


Figure 6

## RETURN ON INVESTMENT

During the first six months after full EMR implementation, the total revenue at the facility increased \$435,263, and total costs decreased \$149,172, resulting in a net gain of \$393,248 after deducting the cost of the EMR investment for that period (\$191,187). By Year Two, annual revenue is projected to increase by \$870,525 and cost savings by \$298,344. By the end of the five-year contract, the facility's total revenue is expected to increase by \$3.9 million and total cost savings by \$1.3 million, resulting in a net gain of \$4.3 million—a total return on investment of 450%:

RETURN ON INVESTMENT	AMOUNT
Total Revenue Increase for 60 Months	\$3,917,363
<small>Note: \$53 RUG Daily Rate Increase for Medicare</small>	
Total Cost Savings for 60 Months	\$1,342,548
Total EMR Investment for 60 Months	\$(955,935)
Total Net Gain (Revenue + Cost Savings - Investment)	\$4,303,976
<b>Total Return on Investment (ROI)</b>	<b>450%</b>

YEAR 1	AMOUNT
Revenue Increase for 6 Months	\$435,263
Cost Savings for 6 Months	\$149,172
EMR System Investment per Year	\$(191,187)
<b>Net Gain</b>	<b>\$393,248</b>

YEARS 2-5	AMOUNT
Revenue Increase per Year	\$870,525
Cost Savings per Year	\$298,344
EMR System Investment per Year	\$(191,187)
<b>Net Gain</b>	<b>\$977,682</b>

The continued annual return on investment increases the value of the facility by more than \$10.8 million through a monthly net gain to EBITDA (Earnings Before Interest, Taxes, Depreciation & Amortization) of \$90,236. The EBITDA net gain resulted from a combination of increased revenue and cost savings, as well as Medicaid reimbursement of the EMR cost to the extent of the 55% Medicaid payor mix and a regional 10% skilled nursing facility capital asset pricing rate:

FACILITY INCREASED VALUATION	AMOUNT
Revenue Increase Per Month	\$72,544
Cost Savings Per Month	\$24,862
Medicaid EMR Reimbursement Per Month	\$8,763
EMR Investment Per Month	\$(15,932)
Monthly Net Gain to EBITDA	\$90,236

Note: Assumes an increase in EBITDA can be achieved after Year 2 with cost of EMR reimbursed by Medicaid up to percentage of Medicaid beds (or 55%)

<b>Additional Value Created</b>	<b>\$10,828,349</b>
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Note: Annual EBITDA / 10% Area SNF Capital Asset Pricing Rate

# CASE STUDY: THE SANDS POINT CENTER

## Mitigating Risk in Long-Term Care Workflow Automation Through Operational Transformation

### LESSONS LEARNED

With each new client and each new implementation, SigmaCare® has learned valuable lessons allowing for continual process and product improvements, all focused on cultivating better ways to guide long-term care facilities toward operational transformation.

Many facility owners and managers report high satisfaction with SigmaCare's commitment to understanding the workflow at individual facilities, making staff training easier. In addition, an on-site project leader helps to engage employees in the process and to ensure attendance in training classes. By involving the director of nursing and the assistant director of nursing in training sessions, nurse leadership can better communicate the value of the new processes and educate staff on long-term benefits of workflow automation.

The centrally hosted ASP model used by SigmaCare® allows for rapid deployment of system updates and provides the foundation for interoperability with third-party providers and vendors. Managers and physicians have reported that remote access to the EMR, made possible through the ASP model, has allowed them to make more informed decisions. Previously, remote staff would have to rely on information reported over the telephone, but now they can access information themselves.

Long-term care requires round-the-clock access to EMRs, both in the facility and remotely, which the ASP-based system delivers. However, any centrally hosted ASP system requires a continuous Internet connection. Redundant Internet connections may fail, but SigmaCare's on-site failsafe system has been proven to offer consistent access to mission-critical medical information in a 24/7/365 environment.

According to the Sands Point Center, one of the best values in the EMR system is the ability to monitor facility activity in real time. In the paper environment, auditing is extremely time consuming and always retroactive. A facility could never approach 98% on-time documentation with paper. This documentation level requires active use of a point-of-care EMR.

Unfortunately, the long-term care industry has long believed that direct-care workers, such as LPNs and CNAs, would have difficulty adopting new technology. This myth was debunked by Sands Point's early experience during the STRIVE project and reinforced by all facilities participating in the Demonstration Project, as evidenced by on-time documentation rates by direct-care workers of 98% or more. Not only are direct-care workers using technology at the point of care, but CNAs are also using this technology via handheld devices.

Nurses check CNA documentation statistics throughout the shift, and a new end-of-shift procedure includes nurse verification that all CNA documentation is complete before the CNA leaves the facility. The Sands Point administrator emphasizes that using real-time data from the dashboard not only improves operations, but also ensures that the facility remains compliant every day. Therefore, the risks inherent with clinical non-compliance—such as resident accidents, poor survey results and impact on facility reputation—are mitigated through the use of management and clinical dashboards. Furthermore, dashboards require data, which is only possible through high user adoption of electronic medical records.

High user adoption of the technology requires operational transformation at the facility. The extent of transformation and the time it takes for the transformation to affect outcomes within the long-term care environment depend to a large extent on the facility's leadership. Different management styles impact the timing and level of transformation at each facility.

Leadership style often predicts success or failure. Employees who are "ordered" to embrace a new way of performing daily tasks may do so, but with resistance. Unengaged facility administrators create obstacles, often unintentionally, during the planning and implementation processes, which leads to poor training-class attendance and multiple problems during go-live. Lack of engagement by leadership also hampers the EMR vendor's ability to gain insight into the facility's workflow processes, making it difficult to understand the nuances at the facility. Finally, without proper leadership by project leaders, facilities may make unreasonable requests.

The pre-implementation phase is governed by the SigmaCare® EMR readiness assessment, which is completed by the administrator and senior members of the facility management team. The readiness assessment examines the facility's goals for EMR implementation, management team dynamics, role of the staff development team, structure of morning meetings, perception of direct-care workers, and history of quality initiatives.



The purpose of the EMR readiness assessment is to understand the facility's management style and culture across the following dimensions:

- Degree of organizational alignment from the management team to line staff
- People orientation vs. process orientation
- Degree of analytical orientation
- Empowering/trusting vs. directive management style
- Active, engaged and visible leadership that intervenes vs. delegates
- Degree of situational management aptitude
- Degree of willingness to take risks and undergo change

Leaders who embrace workflow automation and operational transformation quickly realize the long-term benefits of HIT and what it brings to their residents, their staff and their bottom line. These administrators take advantage of the real-time dashboards to analyze data and continually improve operations. This information also empowers clinicians to make more informed decisions, which improves delivery of care.

SigmaCare's role transitions from tactical to operational as account management continually monitors documentation and metrics at each facility. As needed, SigmaCare® dedicates additional resources for homes with statistics that fall below the expected threshold. Ultimately, SigmaCare's role becomes strategic as the nursing home becomes proficient in using the system and user adoption remains optimized. In the strategic role, the home and SigmaCare® work together to meet long-term goals. Depending on the organization's vision, these goals may spawn new initiatives, which could positively impact the facility's reimbursement, workforce, delivery of care, family involvement, and residents' quality of life.

As HIT continues to evolve across all settings of care, long-term care facilities will benefit from the advancements. The continued focus on consumer-directed care in the ambulatory market and on resident-centered care in the long-term care market will require more emphasis on widespread access to longitudinal health records, which requires universal stakeholder connectivity (e.g., RHIOs) and provider point-of-care data. The end result should be that residents and families become more empowered in the care-planning process. Once consumers are fully engaged in their healthcare, new initiatives in disease management and improved standards of care will emerge—all made possible through sustained automation of the clinical workflow.



SigmaCare® provides point-of-care technology and professional services that enhance quality of resident care, administrative efficiency and staff satisfaction. The company's proprietary software intelligence and system interoperability advance state and federal efforts to create a standardized HIT infrastructure. With up-to-date clinical information available at the time and place of care, these standards aim to improve healthcare quality, reduce medical errors and lower healthcare costs.

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